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ABSTRACT

The Boeing Company contracted with the Northwest Regional Educational Laboratory to evaluate its student internship program, part of a "school-to-work" effort modeled after the nationally recognized Tech Prep initiative. The company's involvement in the Tech Prep Program has been implemented in three phases: (1) the initial phase helped build the applied academic foundation in Washington State's secondary school systems; (2) the second phase promoted the development of a statewide manufacturing technology degree program and provided a work-based student internship program. The third phase involves a consortium with Boeing and other manufacturing companies and educators to develop manufacturing competencies and curriculum modules based on the needs of industry and to involve other companies in Washington in expanding work-based learning opportunities for young people. This program for students enrolled in a manufacturing technology program provided three progressive sessions offered in the summers of the 11th, 12th, and 13th grades. Its goal was to introduce students to career opportunities in manufacturing technology, teach basic manufacturing skills, develop workplace basics skills, help students plan for their future, and assist in high school dropout prevention. The purposes for this evaluation are to: (1) describe the operations and outcomes of the student internship; (2) provide information for continuous quality improvement of the internship; (3) document the impact of the internship on students and others; and (4) identify promising practices related to the internship that could be adapted by others in business and industry. Evaluation methods included the following: review of documents describing the internship structure, student selection process, and curriculum; interviews with interns and a sample of alternates; written surveys of 1993 (n=23 pre, 19 post) and 1994 (n=85) interns before and after summer internships; and follow-up study of work and educational experiences since high school graduation. Findings from written pre- and postinternship surveys and personal interviews indicated that the Boeing internship had the following effects: increased student understanding of manufacturing, influenced several potential dropouts to stay in school, enhanced or confirmed students' career plans, motivated students to go on to postsecondary education, and improved their workplace and employability skills. (Appendixes include survey instruments with responses and interview questions.) (YLB)

ED 382 801

THE Northwest Regional Educational Laboratory

SUMMARY REPORT

THE BOEING COMPANY'S MANUFACTURING TECHNOLOGY STUDENT INTERNSHIP

EVALUATION REPORT

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The Boeing Company's Manufacturing Technology Student Internship

EVALUATION REPORT

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March 1995

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This report on The Boeing Company student internships would not have been possible without the cooperation of a number of people. First we wish to thank Rick Lengyel and Jim Murphy from The Boeing Company and the other staff at Boeing who helped us design the evaluation and collect the data. Next we thank Chris Stone-Ewing, Tech Prep coordinator of South King County Tech Prep Consortium, who assisted in the interview design and collected interview data from the Seattle-area interns. Ms. Stone-Ewing was a Boeing employee when the original group of 25 students began their three-summer internships in 1993; at that time she served as a mentor and student advocate.

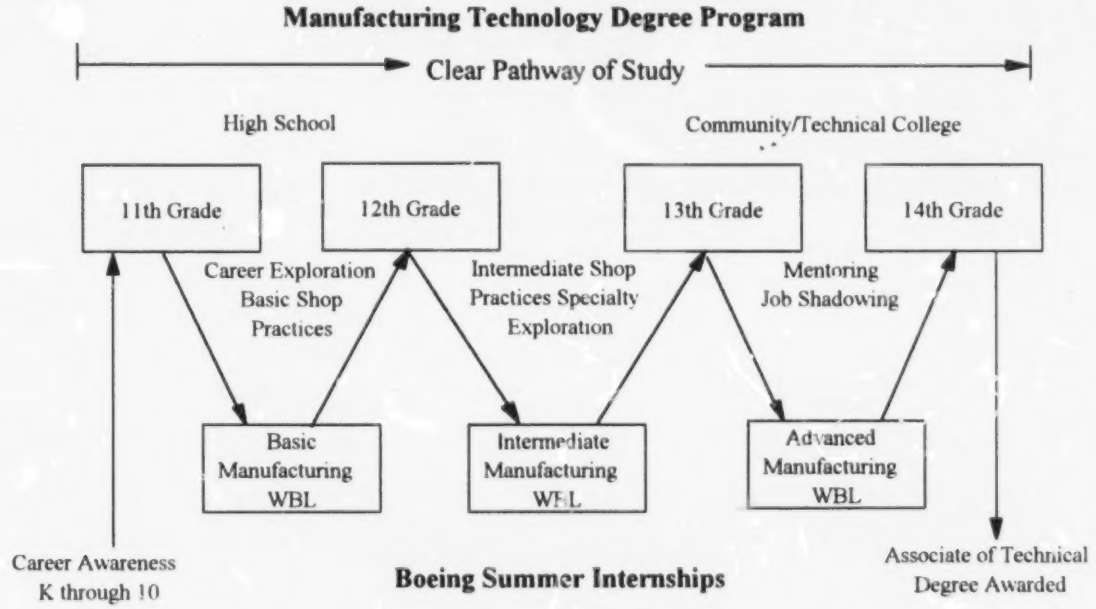
Lynn Wolters at Mt. Hood Community College arranged for the evaluator to observe the internship process in the Portland area and collected student survey data. Steve Funk-Tracy supervised data entry, conducted the data analysis and created the tables, and Angela Cook assisted in the data entry and conducted telephone interviews to gather post-survey data from those intermediate interns who did not mail in their written surveys. Finally, we wish to thank the student interns and instructors, without whom there would be no program.

INTRODUCTION

The Boeing Company recognizes the need for industry to be more actively involved in improving the education, skills, and employability of up to 80 percent of our youth who will not receive a four-year college degree. As a result, Boeing has developed a "school-to work" effort modeled after the nationally recognized Tech Prep initiative. A Tech Prep program combines a high school and community college competency-based curriculum in applied academics and vocational technical courses that leads to an associate degree in technology. Students prepare for entry-level jobs in the workplace, as well as continued education leading to advanced degrees. Successful students are able to perform entry-level skills the day they enter the workforce and progress to higher levels of employment.

The Boeing Company's involvement in the Tech Prep program has been implemented in three phases: the initial phase helped build the applied academic foundation in Washington state's secondary school system. The second phase promoted the development of a state-wide manufacturing technology degree program (within Tech Prep) and provided a work-based student internship program related to manufacturing technology. The third phase involves The Boeing Company in a consortium with other manufacturing companies and educators in a statewide effort to develop manufacturing competencies and curriculum modules based on the needs of industry, and to involve other companies in Washington in expanding work-based learning opportunities for young people.

In February 1993, Boeing approved a student summer internship program for students enrolled in a manufacturing technology program (see chart below). This program provides students with three progressive sessions offered in the summers of the 11th, 12th and 13th grades. The objectives of the internship are to (1) introduce students to career opportunities in manufacturing technology; (2) teach basic manufacturing skills; (3) develop workplace basics skills; (4) help students plan for their future; and (5) assist in high school drop-out prevention. The sessions are coordinated with participating high schools and colleges to ensure that instruction complements students' academic courses. Students are compensated for each of the four-week work-based learning (WBL) sessions.



OVERVIEW OF EVALUATION PROCESS

Purposes

The Boeing Company contracted with the Northwest Regional Educational Laboratory (NWREL) to evaluate the student internship program. The purposes for this evaluation are to (1) describe comprehensively the operations and outcomes of the student internship; (2) provide information for continuous quality improvement of the internship; (3) document the impact of the internship on students and others; and (4) identify promising practices related to the internship that could be adapted by others in business and industry who are interested in developing similar internships for students.

Methodology

NWREL's comprehensive evaluation of Boeing's Tech Prep student internship in manufacturing technology involves a number of methodologies. These include a careful review and study of documents describing the internship structure, student selection process, and curriculum; interviews with each intern and with a sample of alternates; written surveys of 1993 and 1994 interns conducted both before and after their summer internships; and a follow-up study to determine the work and educational paths taken by high school intern graduates and their experiences since high school graduation.

A pre- and post-internship survey was developed by NWREL and used with the 1993 and 1994 interns at the beginning and end of their 1994 summer internship. This report contains data for 23 pre- and 19 post-surveys of 1993 interns in the Seattle area, and for 1994, surveys of 73 interns in Seattle and 12 in the Portland area.

The 1993 internship pre-survey included questions on the amount of knowledge students had prior to the internship on the competencies to be taught, such as precision measuring, and on broader employability outcomes such as group participation, educational and occupational plans, and their assessment of the learning environment in their home high schools the prior year. The 1994 post-internship survey repeated the topics in the internship to see how much students knew about each topic, assessed the learning environment during the Boeing internship, and sought feedback on perceived strengths and weaknesses in the internship and suggestions for improving it.

The 1994 internship pre-survey included questions on how students had heard about the internship, their motivation for participating, their assessment of the internship interview and orientation processes, and the amount of knowledge they had prior to this year's internship on the competencies to be taught. The survey included questions on the learning environment in their home high schools during the prior year, on their educational and vocational plans, and on demographics. The 1994 post-internship survey repeated the topics in the internship to see how much students knew about each topic, and asked for their assessment of the learning environment during the Boeing internship, its perceived strengths and weaknesses, and suggestions for improving it.

The tabulated survey results for pre- and post-internship for each of the three groups are in the appendices. Appendices A and B contain pre- and post-internship findings for the 1993 interns, Appendices C and D contain the findings for the Seattle-area 1994 interns, and Appendices E and F contain findings for the 1994 Portland-area interns.

1993 Interns

Pre- and post-internship data were collected on 23 and 19 intermediate students, respectively, who were in their second year of the internship during the 1994 summer. Sixty-five percent of the interns are male and 35 percent indicated minority ethnic background (13

percent Asian or Pacific Islander, 13 percent Black, and 9 percent American Indian or Alaskan Native). Table 1 shows the percentage of students who indicated they knew about the technical skills taught as part of the intermediate internship. Of the eight skill areas listed, three-quarters of the students knew only about one—blueprint interpretation. By the end of the internship three-quarters knew each of the skills except for resource management, which only 68 percent indicated knowing.

Table 1
Percentage of Intermediate Interns Reporting They Knew "a Lot" or "Some" Regarding Technical Skills on the Pre- and Post-Survey
(N = 19)

Topics	Pre	Post
Labor and industry relations	47	84
Resource management and manufacturing	50	68
Group dynamics and communication	56	95
Customer relations	72	95
Blueprint interpretation	78	84
Numerical control	50	79
Optics in manufacturing	28	79
Manufacturing unit cost	22	68

Another section of the survey asked students to rate on a five-point scale the extent to which they agreed or disagreed with a number of statements reflecting a positive learning environment present in their high school classes and, by the end of the internship, in their summer internship. This was to determine the comparative quality of the learning environment for the Boeing internship. Other research studies have shown that these learning environment characteristics are critical for effective understanding and retention of knowledge. Table 2 shows the comparisons. The results are dramatic. For example, 42 percent of the students agreed that their high school teachers helped them see the purposes for what they were learning, whereas 100 percent felt their Boeing instructors did this. The ratings for the Boeing instructors were higher for all 10 areas rated and were either 90, 95 or 100 percent. These data can serve as a baseline for measuring improvement in the regular high schools (that is, those not involved in internship programs) in the future as they move toward developing a more relevant instructional environment.

Table 2

Strongly Agree with the Following Statements Regarding Last Year's High School Classes and the 1994 Internship

(N = 19)

	STATEMENT	1993-94 High School	1994 Internship
A.	Teachers/The Boeing instructors helped me see the purposes for what I am learning	42	100
B.	New information is connected to what I already know	63	95
C.	The information to be learned is related to practical, real-life applications	37	90
D.	The information in one class is related to what is being taught in other classes/the internship	63	90
E.	Students are encouraged to use the knowledge gained to solve problems	53	100
F.	Students work together as a team	37	95
G.	Students have opportunities for hands-on learning	42	100
H.	Courses are/Information was taught in an interesting manner	32	95
I.	Teachers show/the Boeing staff showed that they really care about me	58	95
J.	Teachers/Instructors sometimes work together to plan or present the class (team teaching)	37	100

In addition to the learning environment items common to both the internship and regular high school classes, other questions were asked specifically of the Boeing internship. Responses to these questions were given on a five-point scale ranging from "strongly agree" to "strongly disagree." These responses are shown in Table 3. Of special note is that 100 percent of the interns felt that, in comparison with their high school classes, they were more successful as learners at Boeing. It is also significant that 95 percent of the interns agreed that the Boeing staff made program changes based on input from them (the other 5 percent marked "uncertain").

Table 3

Percentage of Interns Rating Statements about Their Internship Experiences

STATEMENT	SA	A	U	D	SD
K. I feel that manufacturing would be an interesting career field	37	16	32	16	
L. The instructors knew their content well	79	21			
M. The instructors treated me as a responsible adult	61	33	6		
N. Compared to my high school classes, I feel that I was more successful as a learner at Boeing	84	16			
O. I look forward to continuing as an intern in future years	63	21	11	5	
P. I now look on learning as my job	26	58	16		
Q. Learning can be fun	26	74			
R. I would recommend this internship to my friends	74	26			
S. I generally discussed my internship experiences with my parents/family at least weekly	42	37	5	16	
T. This internship will help me with my future employment	68	21	5	5	
U. This internship will help me with my future education	58	32	5		
V. The Boeing staff made program changes based on input from me and other students	74	21	5		
W. The career speaker program	58	26	5	11	
X. Tours to other manufacturers	63	26	5	5	

Notes: SA = Strongly Agree; A = Agree; U = Undecided; D = Disagree; SD = Strongly Disagree

Students on the post-internship were asked six open-ended questions regarding internship strengths, weaknesses, suggested changes, suggestions for changes in how high schools could operate, post-secondary major, job title, and skills applied in the intermediate internship that had been learned in the basic internship. A listing of these responses is at the end of Appendix B. A summary of these responses is shown here.

The most frequently mentioned strengths were working in teams, working in the shop, optics, building an actual airplane part, and the tours. Weak points mentioned by several students included not enough hand-on activities, some boring speakers, and some students not appearing to care. Suggested changes included more shop time and lengthening the internship to 6-8 weeks. As a suggestion for improving their former high school experience, they recommended more hands-on work, stress on real life applications, and taking field trips. The most commonly mentioned post-secondary majors listed were engineering (5 students), manufacturing (4) and undecided (4). Their current jobs were primarily in

retail (9 students) and manufacturing (2). The skills used most in the intermediate internship that they had learned in the basic internship were teamwork, mathematics, blueprint reading, and shop practices.

1994 Interns

Appendix C contains tabulated responses for 73 first-year 1994 interns in the Seattle area prior at the beginning of the summer internship. The most common way students learned of the Boeing internship was from their teachers. Although pay was an incentive for two-thirds of the students to join the internship, even more (86 percent) were motivated by the opportunity to learn about a career in manufacturing. Most students experienced no problems with the internship interview, and at least two-thirds found the parent/student orientation to be helpful.

Table 4 shows the percent of interns who reported knowing "a lot" or "some" technical skills taught in the internship on the pre- and post-internship survey. Prior to the internship three-quarters or more already reported knowing about three of the 19 topics to be taught (problem solving, team building, and the importance of punctuality). Less than a quarter knew about just-in-time production systems, hazardous waste management, electrical wire bundle build-up, or statistical process control. After the internship three-quarters or more reported knowing about *all* of the 19 topics listed. In regard to basic employability skills, such as getting up on time for work, at least 90 percent knew about these both before and after the internship, as is shown in Table 5.

Table 4

Percentage of Basic Interns Reporting They Knew "a Lot" or "Some" Regarding Technical Skills on the Pre- and Post-Survey (N = 60)

Topics	Pre	Post
Diversity in the workplace	67	90
Team Building/Working in teams	81	98
Problem solving	92	98
Importance of punctuality	80	90
Manufacturing process	30	97
Assembly lines	37	98
Just in time production systems	17	91
Precision measuring	50	98
Manufacturing math/trigonometry	45	97
Blueprint reading	32	75
Manufacturing materials	32	93
Shop safety	85	97
Shop practices	56	97
Composites	41	93
Computer aided design	41	71
Hazardous waste management/Hazardous materials	18	88
Electrical wire bundle build-up	15	97
Continuous quality improvement	37	95
Statistical process control	5	82

Table 5

Percentage of Basic Interns Reporting They Knew "a Lot" or "Some" Regarding Basic Employability Skills on the Pre- and Post-Survey (N = 60)

Topics	Pre	Post
Getting up on time for work	100	93
Regular attendance at work	100	93
Group participation	95	100
Getting along with others	100	98
Appropriate behavior/Workplace ethics	100	98
A sense of being a part of a group	98	100
Budgeting time	92	95
Budgeting money	95	90
Preparing myself for work each day	100	97

Another section of the survey asked students to rate on a five-point scale the extent to which they agreed or disagreed with a number of statements reflecting a positive learning environment present in their high school classes and, by the end of the internship, in their summer internship. Table 6 shows the comparisons. The results are dramatic; for example, 50 percent of the students agreed that their high school teachers helped them see the purposes for what they were learning whereas 95 percent felt their Boeing instructors did this. The ratings for the Boeing instructors were higher in all 10 areas rated.

Table 6
Percent of Basic Interns Reporting That They Agree or Strongly Agree with the Following Statements Regarding Last Year's High School Classes and the 1994 Internship
N = 70

	STATEMENT	1993-94 High School	1994 Internship
A.	Teachers/The Boeing instructors helped me see the purposes for what I am learning	50	95
B.	New information is connected to what I already know	85	88
C.	The information to be learned is related to practical, real-life applications	65	85
D.	The information in one class is related to what is being taught in other classes/the internship	57	88
E.	Students are encouraged to use the knowledge gained to solve problems	78	88
F.	Students work together as a team	65	90
G.	Students have opportunities for hands-on learning	68	97
H.	Courses are/Information was taught in an interesting manner	34	70
I.	Teachers show/The Boeing staff showed that they really care about me	39	83
J.	Teachers/Instructors sometimes work together to plan or present the class (team teaching)	45	90

Students were asked how they select the high school courses to take the following year. Three-quarters or more select courses based on high school graduation requirements and their future educational plans. After high school three-quarters of the students plan to attend a two-year community college program and 37 percent a four-year college. Also, a quarter of the students plan to obtain a one-year certificate or attend a training program

While 96 percent of the students said they have educational plans for after high school, only 70 percent have work plans for after high school graduation.

1994 Portland Interns

The summer of 1994 marked the introduction of the Boeing student internship in the Portland area. Twelve students participated from six area high schools. One of the students was female and three were minority (two American Indian or Alaska Native and one Hispanic). All had heard of the internship from their teachers and considered it an opportunity to learn about a career in manufacturing. Eighty-three percent were attracted to the internship as an opportunity to learn what is going on at Boeing, 67 percent because of the pay, and 50 percent because they felt it would help them understand the linkage between school and the workplace. A tabulation of the pre-internship survey results appears in Appendix E.

Only one student reported having had any trouble with the internship interview and all considered the parent/student internship orientation as helpful to them. All students reported having a post-high school educational plan. Three-quarters plan a two-year community college program and one-quarter plan to attend a four-year college. Three-quarters of the interns also had a post-high school career plan. Seventeen percent were interested in manufacturing careers; many of the rest were vague responses.

Table 7 shows the percentage of interns reporting that they knew "a lot" or "something" regarding the topics covered by the internship before and after the internship. Many of the differences noted between "pre" and "post" are dramatic. The only "post" rating that indicates less than two-thirds of the interns knew it was tool design, where 42 percent indicated they still knew "little."

Table 7

Percentage of Portland Interns Reporting They Know "a Lot" or "Some" Regarding Employability Skills on the Pre- and Post-Survey

N = 12

Topics	Pre	Post
Diversity in the workplace	33	100
Team Building/Working in teams	83	100
Problem solving	75	100
Importance of punctuality	75	100
Manufacturing process	41	100
Assembly lines	41	83
Just in time production systems	25	100
Precision measuring	72	100
Manufacturing math/trigonometry	25	75
Blueprint reading	33	100
Manufacturing materials	58	88
Shop safety	92	100
Shop practices	66	100
World class competitiveness	41	92
Computer aided design	59	83
Hazardous waste management/Hazardous materials	17	83
Tool Design	33	58
Continuous quality improvement	25	100
Statistical process control	17	92
Getting up on time for work	92	100
Regular attendance at work	92	100
Group participation	100	100
Getting along with others	100	100
Appropriate behavior/Workplace ethics	100	100
A sense of being a part of a group	83	100
Budgeting time	84	91
Budgeting money	84	91
Preparing myself for work each day	83	100

Table 8 shows interns ratings comparing their perceptions of the Boeing and their home high school learning environment.

Table 8

Percent of Portland Interns Reporting That They Agree or Strongly Agree with the Following Statements Regarding Last Year's High School Classes and the 1994 Internship

N = 12

	STATEMENT	1993-94 High School	1994 Internship
A.	Teachers/the Boeing instructors helped me see the purposes for what I am learning	50	100
B.	New information is connected to what I already know	75	100
C.	The information to be learned is related to practical, real-life applications	67	100
D.	The information in one class is related to what is being taught in other classes/the internship	67	100
E.	Students are encouraged to use the knowledge gained to solve problems	92	100
F.	Students work together as a team	75	92
G.	Students have opportunities for hands-on learning	58	100
H.	Courses are/Information was taught in an interesting manner	41	100
I.	Teachers show/The Boeing staff showed that they really care about me	59	100
J.	Teachers/Instructors sometimes work together to plan or present the class (team teaching)	66	88

In addition to questions about the learning environment and items common to both the internship and regular high school classes, questions were asked specifically of the Boeing internship. Responses to these questions were given on a five-point scale ranging from "strongly agree" to "strongly disagree." These responses are shown in Table 9. Of special note is that 100 percent of the interns felt that, in comparison with their high school classes, they were more successful as learners at Boeing. It is also significant that 95 percent of the interns agreed that the Boeing staff made program changes based on input from them (the other 5 percent marked "uncertain"). All students said they would recommend the Boeing internship to their friends.

Table 9

Percentage of Interns

Rating Statements about Their Internship Experiences

STATEMENT	SA	A	U	D	SD
K. I feel that manufacturing would be an interesting career field	37	16	32	16	
L. The instructors knew their content well	79	21			
M. The instructors treated me as a responsible adult	61	33	6		
N. Compared to my high school classes, I feel that I was more successful as a learner at Boeing	84	16			
O. I look forward to continuing as an intern in future years	63	21	11	5	
P. I now look on learning as my job	26	58	16		
Q. Learning can be fun	26	74			
R. I would recommend this internship to my friends	74	26			
S. I generally discussed my internship experiences with my parents/family at least weekly	42	37	5	16	
T. This internship will help me with my future employment	68	21	5	5	
U. This internship will help me with my future education	58	32	5	5	
V. The Boeing staff made program changes based on input from me and other students	74	21	5		
W. The career speaker program	58	26	5	11	
X. Tours to other manufacturers	63	26	5	5	

INTERVIEW FINDINGS

Intern Profiles

All but one of the 25 interns who started in the summer of 1993 were available for interviews. Of the 24 interviewed, nine were female and 15 were male. All were 11th grade students engaging in the summer internship between their junior and senior years. Interns came from five high schools: Auburn, Ingraham, Juanita, Lynnwood, and Mt. Tahoma. All but one of the interns had plans for education after high school, and 17 had plans for work after completing high school. Fifteen interns were white; four, African American; three, Asian; and two, American Indian.

In December 1993, Chris Stone-Ewing, a part-time employee of NWREL and former employee at Boeing, conducted in-depth interviews with 24 of the 25 interns to determine

their experiences before, during, and after the internship. Where appropriate, the same questions were addressed to students who were nominated for the internship but not selected to participate. This group serves as an comparison group and will also be followed up in the future.

Student interview questions were developed cooperatively by Tom Owens and Chris Stone-Ewing of NWREL's Education and Work Program and Rick Lengyel of The Boeing Company. A structured interview addressed both the objectives of the student internship and the impact of the internship experience on participants and their parents with questions about activities *before* the internship (such as publicity and intern orientation); *during* the internship (such as presentations and hands-on activities); and *after* the internship (such as continued contacts with other interns, the Boeing staff and company mentors, or speaking engagements featuring student interns). In addition, the evaluators collected information on the characteristics of the students and the extent to which they were able to apply the internship experiences to classes and work experiences.

Activities Before the Internship

Four out of five students first heard about the Boeing internship from their high school teachers. Each participating school had a unique process for informing students that relied heavily on one or two staff. The major motivation for students participating in the internship was the opportunity to learn more about new careers and about The Boeing Company. About half of the interns were motivated by the pay received during the internship. Nine interns were motivated because they thought it was a program for prospective engineers. Three-quarters of the interns were encouraged to apply by their parents/guardians and by their teachers. Only one-fifth were encouraged by their counselors.

About 85 percent of both the interns and alternates felt the interview selection process allowed them to demonstrate their abilities. Most had no trouble with the interview questions and assignments. Most interns attended the student orientation and had a parent/guardian also attend. All students and parents attending the orientation found it helpful.

Activities During the Internship

Students rated seven elements of the classroom presentations as "excellent," "good," "fair," or "poor." No element was rated "poor," and only two students rated one element as "fair." Areas rated as "excellent" by two-thirds or more of the interns were the knowledge of the presenters, class materials, complete blocks of instruction, the daily process checks, and the overall effectiveness of the presentations.

Despite the fact that many of the interns had a weak attendance record in high school, they averaged a 99.9 percent attendance rate in the internship, even though some had to drive over an hour each way.

Impact of the Internship

All but two of the interns grew in their understanding of manufacturing as a result of their internship experiences. They became aware that manufacturing was more complex than they realized before the internship, and four indicated greater awareness of teamwork as part of the process.

Two-thirds or more of the interns indicated that the internship contributed "a lot" or "somewhat" to the following general employability outcomes: group participation; a sense of being part of a group; budgeting time; appropriate behavior/workplace ethics; getting along with others; and getting up on time for work. Of those remaining, most indicated they felt they already had these skills before participating in the internship.

Selecting from a four-point scale of "a lot," "some," "little," or "none," two-thirds or more indicated they learned "a lot" or "some" about each of the 21 elements that comprised the curriculum. Areas where 90 percent or more indicated they had learned "a lot" are precision measuring, just-in-time manufacturing processes, electrical wire bundling, diversity in the workplace, working in teams, composites, and the variety of careers in manufacturing.

Two of the 24 interns indicated that they had considered quitting high school before joining the Boeing internship program. The internship demonstrated, however, the value of education and influenced them to work toward completing high school.

All but one of the interns indicated that they learned about new career opportunities during the internship. For eight of the students, the internship changed their career plans, and for another 12, it reinforced their career choices.

The internship changed or reinforced career plans for 20 of the 24 students. Quotes included: "It reinforced the idea of going to a community college"; "It made me more enthusiastic about going after my plans"; "I would like to do something in manufacturing"; and "It made me want to go for it and exceed my goals."

The internship also affected students' attitudes about school and education for 20 of the 24 students interviewed. Quotes included: "It got me more focused on the importance of school"; "It showed me what I could do after school"; "I come to school more because now I realize I need it"; "I picked classes that would help my future, not just any class"; "The internship has made me want to stay in school, graduate, and keep going"; and "My attitude changed ... I've decided that I am going to classes and I'm getting really good grades. I've got a 3.7 GPA up from 1.9 last year."

All but one of the interns indicated plans to continue their internship experience next summer. All expressed an interest in entering a post-secondary program after high school.

Follow-up Study of Interns

Introduction

This study was requested by The Boeing Company in an effort to continually assess and improve their Manufacturing Technolcgy Tech Prep Student Intern Program. This is the second study conducted on the 1993 year group of students, the first class of Boeing interns. This study, conducted in early 1995, focuses on the students as they progress through their post-secondary experiences, on the second year of the internship, and on some issues surrounding work their salary. The first study focused on the activities associated with the internship processes, both at the school and during the actual internship. The first study included interviews with 24 of the 25 original students and with a control group of 22 students

Case Study Subjects

Eight students were chosen for this study as a representative group of the original 25 students. Of the eight students involved in this study, three were female and five were male. Six of the eight students were Caucasian, two were of Pacific Islander descent. The eight students represented four of the five participating high schools in the 1993 year group. While this group does not accurately reflect the ethnic diversity and gender mix of the 1993 year group, its members were selected based on availability and willingness to take part in the study.

Methodology

A series of interview questions was jointly developed by Chris Stone-Ewing, research associate, and Tom Owens, senior research associate, from the Northwest Regional Educational Laboratory. The students were chosen based on the gender, ethnic mix, known post-secondary plans, and representation of participating high schools.

Each student was asked a series of questions pertaining to four main categories. The categories covered current educational activities, current work activities, a comparison between current salary and intern salary, and specific questions regarding the second year of the intern program. Individual interviews were conducted with each student. The interviews were taped, and the summary and analysis were developed from the transcripts. A list of the interview questions is in attachment (G).

Findings

Six of the students are attending community colleges, one is attending a technical college, and one is attending a private university. Four of the students selected the school they are attending because it was close to where they lived and not because of any specific academic or program selection criteria. Three selected the college they were attending because it offered a manufacturing program they were interested in. One student chose the private university based on its athletic program and teacher-to-student ratio. Of the eight students, three are in manufacturing-related programs, two are in engineering-related transfer programs, two are in general studies transfer programs, and one is in an athletic trainer program. While each of the students indicated that he or she was involved in some form of program, many lacked focus in their current curricular choices. Several reported poor or no guidance from the assigned student advisor. Only one student reported significant and continuous advising from her advisor, even though one of the student's advisors was a Boeing educator intern.

When asked if they felt academically and technically prepared for their current classes, three reported a lack of preparedness for college in general. They did not feel that they had been prepared for the self-management and high expectations of the college environment, which resulted in course failure or drops for two of the three. Most of the students indicated a preparedness for their math classes, but felt that the science classes, with the exception of physics, were far more challenging. Two cited the internship as helping to provide a strong foundation for their academic and technical class work. Four indicated that they felt academically and technically prepared for their current classes. When asked if they felt challenged by their current classes, two of the eight indicated that they were not. The remaining six cited the depth of understanding required was a challenge.

Five of the eight students reported that they were able to draw connections between their current classes and their internship experiences. Layout techniques, precision measuring, teaming, quality, blueprints, trigonometry, materials and career speakers were all mentioned as obvious connections. Three students were not able to connect their current classes with any of their internship experiences. One indicated that he was aware of the value of hands-on training for an engineer. Two remarked about the use of communications skills.

Only one of the eight students was able to take advantage of an articulation agreement providing credit for internship experience. She received 14 credits through work with her student advisor. One student had already taken the classes cited in the articulation agreement prior to meeting with his student advisor. One student tried but was not registering for a program area covered by the articulation agreement, and one student is still waiting for her advisor to determine if credit can be granted. One student could not take advantage of the articulation agreement because the technical college he is attending does not work in credits, but in clock hours. The remaining students either did not pursue getting credit or were denied credit either because their school did not have a signed agreement, or because they were not registered in a manufacturing program.

Six of the eight interns are currently working. Four work part time as a checker at a grocery store, a telemarketer, and a stocker at a grocery store, and one is a work-study student in a college drafting department 10 to 12 hours per week. Two work full time, one as a cement chipper and one as a manager at Pizza Hut. Only one was able to see any connections between her current job and her experience as an intern. She indicated that she is a grader for the drafting department and is reading blueprints, interpreting them and checking for accuracy using skills acquired in the internship. Two of the students were able to see a connection between their current job and the college classes they were taking. One indicated that she used some of the accounting skills she was learning in Accounting 101, and one indicated that everything relates and that her job has helped to improve her work in class. All of the students who are working reported that their supervisors were aware that they were Boeing interns. Several of the supervisors were highly interested, one was skeptical, but all were moderately supportive.

Each of the interns stated that the salary they received as a Boeing intern was fair. Students made references to what they had been paying in tuition to learn in comparison to what they being paid as an intern to learn. None of the students indicated that the salary should be higher, even though their current hourly rates ranged from a low of $5.00 to a high of $8.00. Several remarked that although the hourly rate may be lower than what they are currently making, the hours are longer so that they could make more money.

Most of the students used the money from the internship for personal or transportation expenses. Only two used the money for school or school-related expenses.

Three of the students felt that the first year of the internship experience was better than the second year. They noted more activities and a continuity between learning and hands-on experience factors relating to these feelings. All reported that they applied information learned in the first year to their tasks in the second year. Specific examples of the connections between the first-year experience and the second year included working with the tools, working in teams, building a part and then building an assembly, and using trigonometry. One student thought that the first year was dull in comparison to the second year. He remarked that the chance to start from scratch and work something all the way through was what he really liked about it.

When the students were asked about the most significant discovery experience they had during the internship, their replies included working with the Boeing people, reprogramming CNC machines, hands-on learning, use of the tools, the tools, learning trigonometry, making an actual plane part, continuous quality improvement (CQI), just-in-time manufacturing, and selling a part to the customer.

Significant Follow-up Findings

- **The students pursuing a career in manufacturing are more focused and better prepared than the students who are not.**

Three students are involved in a manufacturing program. These students are in a focused program, taking classes that pertain to their career goal in manufacturing. All three have indicated that they were prepared for their academic and technical classes. They were able to connect what they were learning in classes with their internship experience. These three students in particular were able to see clearly the connections between their first-year internship experience and their second year. All have had the support of a vocational teacher in their education planning, even though two got that support from their high school teachers and one from both her high school and college teachers. Many of the classes these students are taking are hands-on or applied learning. The other students, taking a more general education approach, are involved in primarily theoretical classes or traditional academics. Many of these other students have had difficulty adjusting to the discipline and self-management required of college students.

- **Selecting the right students for the program is critical.**

As cited in previous studies, selecting appropriate students for the intern program is critical. Students who came into the intern program with a general interest in manufacturing have been able to benefit from a focused plan that includes their educational and work-based learning experiences. Students who came into the program wanting to be engineers or with no interest in manufacturing, while immensely enjoying the opportunity, are not using the internship for much more than a summer job and a good resume reference. The screening process at the high school level should improve to assure selection of successful candidates. Failure to do so will continue to result in inappropriate student participation and potentially could reduce the overall success of the program.

- **Student advising is weak or non-existent.**

All but one of the students did not receive any significant advising when choosing college classes. This deficiency has resulted in students taking classes that will not pertain to their major program of study and could result in their inability to return for the third-year internship because of having to take summer classes.

- **Students were not prepared for the expectations of college-level work.**

Many of the students reported difficulty adjusting to the higher expectations of college-level work and employing study skills, self-management, and self-discipline. This has resulted in several students either failing or dropping some of their first semester classes. While this is not an uncommon problem with first-year college students, it appears that individuals who are primarily encountering these types of difficulties are those same individuals who otherwise lack focus and a clear plan for their future.

- **Students are not well versed in navigating college administrative systems.**

Many of the students have not been able to navigate the administrative processes required for registration and financial aid. This has resulted in some of the students taking classes that do not pertain to their major because these classes were all that were still available. Some students have been on the brink of dropping out of their college program because their financial aid paperwork and authorization did not arrive in a timely manner. The students did not seem able or willing to demonstrate self-advocacy skills.

- **Students are not getting the benefit of articulation agreements.**

Only one of the eight students interviewed was able to take advantage of the articulation agreement between Boeing and the colleges. The college advisors for the remaining seven were either unaware of the agreement or the agreement did not pertain to each student's course of study. In one case, the student had already taken the courses for which the articulation agreement granted advanced placement before meeting with his advisor. Because of this, the student had to take the classes even though credit could have been awarded. This situation amplifies the need to select students who are interested in pursuing a career in manufacturing and providing in-depth information on how the students can utilize the articulation agreements with the participating colleges.

- **Students requiring a job to meet living expenses may have a conflict between keeping their job and returning for their third year.**

Most of the students are working. Two in particular are working full time specifically to meet household expenses. While both students indicated that they would return for the third year, it will be a difficult choice for them to make. Students working part time have not cited the same conflict.

- **The student stipend hourly rate is fair, but lower than what the students make on an average. Most of the students do not work full time.**

Their salaries ranged from $5.00 to $8.00 per hour and averaged $6.55. As the students get older and have more personal responsibilities than they did in high school, the ability to make enough money to meet both educational and personal expenses will become more important. All of the students interviewed indicated that the intern stipend was fair, and six of them specifically remarked about being paid to learn.

- **The interns were able to connect what they learned during their first year of internship to what they were learning during the second year.**

Overall the students were aware of using the skills they learned during the first year, to accomplish the tasks for the second year. Many remarked about year one being the foundation for year two.

- **The wide variety of program content resulted in a meaningful experience for participants.**

The wide diversity of answers regarding the most significant discovery experience the student had during each year indicates that the program is well rounded and provides meaningful experiences for students with a wide variety of interests. It should be noted, however, that the most telling discovery experiences included those for three students who discovered their own capabilities, and for one student who discovered the concept of improvement.

Summary of Findings

This report contains findings for approximately 100 Boeing student interns based on their experiences during 1994. Twenty students were in the second-year intermediate internship, 75 were in the first-year basic internship in the Seattle area, and 12 were in the first-year internship in the Portland area. The findings come from two sources: written pre- and post-internship surveys and personal interviews with the intermediate interns after their first year, and from a sample of eight students after their second internship.

1. In summary, interview data indicate that the Boeing internship has met its objectives. It has increased student understanding of manufacturing, influenced several students to stay in school who were considering dropping out of high school, enhanced or confirmed students' career plans, motivated students to go on to post-secondary education, and improved their workplace and employability skills.

2. Interns learned the content of the summer program. Approximately 80 percent of second-year interns reported having learned about six of the eight topical areas of their summer internship (only 68 percent felt they understood something about resource management and manufacturing unit costs), while only one of these eight areas (blueprint interpretation) was familiar to 80 percent of the interns prior to their internship. More than 80 percent of the first-year interns reported learning material in 17 of the 19 topical areas of their summer internship (71 percent knew something about computer-aided design and 75 percent knew something about blueprint reading), while only four of these areas (team building, problem solving, importance of punctuality, and shop safety) were familiar to 80 percent of the interns before their internship. Ninety percent or more indicated they had learned "a lot" during the internship about precision measuring, just-in-time manufacturing processes, electrical wire bundling, diversity in the workplace, working in teams, and composites, and the variety of careers in manufacturing

3. Interns in both the basic and intermediate levels rated the learning environment of the Boeing internship as superior to that of the high schools from which they came. For example, more than 95 percent of the Boeing interns viewed the internship instructors as helping them see the purposes for what was being learned; in contrast, only about half of the students perceived their high school teachers as doing the same. They also were much

more likely to judge their Boeing instructors as caring about individual student interests and needs than their high school teachers. All interns agreed that they felt more successful as learners at Boeing, than in their high school classes.

4. Almost all the intermediate interns and alternates felt the interview selection process allowed them to demonstrate their abilities. Most had no trouble with the interview questions, and most found the parent/student orientations useful.

5. Students rated instructional processes high. Students were asked to rate seven elements of the classroom presentations as "excellent," "good," "fair," or "poor." No elements were rated "poor," and only two students rated one element as "fair." Areas rated as "excellent" by two-thirds or more of the interns were the knowledge of the presenters, class materials, complete blocks of instruction, the daily process checks, and the overall effectiveness of the presentations. Despite the fact that many of the interns had a weak attendance record in high school, they averaged a 99.9 percent attendance rate in the internship, even though some had to drive over an hour each way.

6. All but two of the intermediate interns grew in their understanding of manufacturing as a result of their internship experiences. They became aware that manufacturing was more complex than they realized before the internship, and four indicated greater awareness of teamwork as part of the process.

7. Two-thirds or more of the interns indicated that the internship contributed "a lot" or "somewhat" to the following general employability outcomes: group participation; a sense of being part of a group; budgeting time; appropriate behavior/workplace ethics; getting along with others; and getting up on time for work. Of those work-readiness competencies remaining, most indicated they felt they already had these skills before participating in the internship.

8. Two of the 24 intermediate interns indicated that they had considered quitting high school before joining the Boeing internship program. The internship demonstrated, however, the value of education and influenced them to work toward completing high school.

9. All but one of the intermediate interns indicated that they learned about new career opportunities during the internship. For eight of the students, the internship changed their career plans; for another 12, it reinforced their career choices.

10. The internship changed or reinforced career plans for 20 of the 24 intermediate interns. Comments included: "It reinforced the idea of going to a community college"; "It made me more enthusiastic about going after my plans"; "I would like to do something in manufacturing"; and "It made me want to go for it and exceed my goals."

RECOMMENDATIONS

1. The evaluation results over the past two years have proven important in providing not only a justification for the value of the internship program, but also specific findings upon which to base continuous quality improvement of the program. The Boeing staff are to be commended for the way in which they have used the feedback for program improvement. Given the new direction for the advanced internship in 1995 in which interns will be placed in manufacturing settings in other companies and the fact that a more precise screening process will be used to select students into the Boeing internship, it is recommended that the evaluation continue for at least another year and that it pay special attention to the new aspects of the program and to features of the internship that will make it exportable to other manufacturing firms.

2. Given the lack of career focus of many of the existing interns, we recommend that the student selection criteria be improved to admit only those students interested in manufacturing technician-level work.

3. Because of the number of intermediate interns experiencing problems in education planning, we recommend that interns be given a module on how to choose the right classes, what programs are available, articulation agreements, and how to navigate through the administrative processes at the colleges. This module should be given during the second summer, in addition to the career day the program already sponsors in the winter.

4. We recommend that third-year students be invited to fill one of the career speaker time slots to help second-year students learn about the realities of college expectations. No one can tell the story better than advanced students can. This peer-to-peer coaching may be an effective reality check for some of the students who are coming from high schools where there are low or non-existent expectations, or for students accustomed to just getting by in their classwork.

5. Some students were concerned that the second-year curriculum lacked enough hands-on experiences and chances to reinforce what has been learned. We recommend that the second-year curriculum be reviewed and opportunities for immediate reinforcement activities of recent learning experiences be considered for inclusion. Hands-on activities should occur earlier in the second year curriculum than they do now and be better integrated with classroom learning as in the first year.

6. Some students found the career speakers dull. We recommend that the speakers be given some help in making their presentations more interesting and interactive.

7. In the follow-up study we found that most Boeing interns had temporary jobs during the school year unrelated to manufacturing. We recommend coordinating with regional

manufacturers that hire part-time workers for possible employment placement of students during the school year or as summer replacements as is done at Kaiser in Spokane.

8. Student interviews revealed very limited advisor contact with interns during the school year. We recommend that both an employer and an educator be selected as mentors for each intern and be responsible for personal contact on a regular basis with the intern throughout the school year.

9. Interviews with a sample of Boeing student interns this year provided rich data about the program not available through other sources. We recommend continuing to follow up on these program participants to build on successful practices and to identify opportunities for program improvement.

Appendix A
Boeing Intermediate Manufacturing Technology
Pre-Student Internship Survey
N = 19

Student Name: _____ School: _____

Social Security Number: _____ Date of birth: _____
mo / day / year

This survey is intended to give us some useful background about the students who are entering the second year of the Boeing Student Internship Program The information will be held confidential and will not affect your participation in the program. Please take a few minutes to complete it and return it to the internship coordinator. If you do not understand a particular question please feel free to ask.

1. What is your motivation to continue participation in the internship program? (*Check all that apply)*

   57 It is a paid internship
   70 The opportunity to acquire college credit for the internship
   52 The opportunity to learn about a specific career in manufacturing
   44 Other (specify) _____

2. Was the parent/student internship orientation on May 14th helpful to you? (*Check one of the choices below*)

   5 Very Helpful 45 Helpful 45 Somewhat Helpful 5 Not Helpful
   0 Don't Know

3. What were the most useful parts of the orientation? *(Select one or more)*

   48 Learning about the college credits for the internship
   39 The opportunity to see friends
   39 The information about community/technical colleges involved in manufacturing technology
   61 Overview of the second-year internship curriculum
   0 Other (specify) _____

4. The second-year summer internship is designed to teach you about topics such as those listed below. Most students have not studied these topics before. How much do you know about each of the following topics?

Topics	A Lot	Some	Little	None
Labor and industry relations	4	44	39	13
Resource management and manufacturing	14	36	32	18
Group dynamics and communication	18	32	41	9
Customer relations	14	55	27	5
Project alignment	5	36	32	27
Blueprint interpretation	23	55	18	5
Numerical control	9	36	41	14
Optics in manufacturing	5	18	46	32
Manufacturing unit cost	9	14	46	32
Project evaluation	5	36	46	14
Customer buy-off	5	18	41	36

5. Are you certified by the American Red Cross in first aid/CPR?

83 Yes 17 No6. The following questions relate to the high school courses you took this past school year. For each statement please provide one of the following ratings by circling: Strongly Agree (SA), Agree (A), Uncertain (U), Disagree (D), or Strongly Disagree (SD).

STATEMENT	SA	A	U	D	SD
A. Teachers helped me see the purposes for what I am learning	14	32	9	36	9
B. New information is connected to what I already know	14	50	18	18	
C. The information to be learned is related to practical, real-life applications	14	32	18	32	5
D. The information in one class is related to what is being taught in other classes		27	36	23	14
E. Students are encouraged to use the knowledge gained to solve problems	14	46	23	18	
F. Students work together as a team	18	27	32	14	9

STATEMENT (Continued)	SA	A	U	D	SD
G. Students have opportunities for hands-on learning	18	32	18	23	9
H. Courses are taught in an interesting manner	9	27	32	18	14
I. Teachers show that they really care about me	23	41	14	14	9
J. Teachers sometimes work together to plan or present the class	9	27	36	27	

7. a. Do you have any education plans for after high school graduation?

   100 Yes

   b. If yes, what are your educational plans?

   61 – Two-year program/community college
   66 – Four-year college
   4 – Education beyond college
   4 – Military

   c. If yes, have you ever discussed these plans with your parents/family?

   100 Yes

8. a. Do you have any work plans for after high school graduation?

   78 Yes 22 No

   b. If yes, what are your work plans?

   61 – Two-year program/community college
   48 – Part-time work
   13 – Manufacturing/electronics
   11 – Engineering
   9 – Non-skilled jobs
   4 – Vague response

   c. If yes, have you ever discussed these plans with your parents/family?

   90 Yes 10 No

9. What do you expect to gain from your second-year summer internship experience?

_____

_____

10. You are: 65 Male 35 Female

11. What is your ethnic background? *(Circle one or more)*

Asian or Pacific Islander 13
Hispanic, regardless of race 0
Black, not of Hispanic origin 13
White, not of Hispanic origin 83
American Indian or Alaskan Native 9

12. How would you rate your ability to learn mathematics?

33 Excellent 50 Good 18 Fair 0 Poor

13. How would you rate your ability to learn science?

27 Excellent 55 Good 18 Fair 0 Poor

14. How would you rate your ability to learn to write well?

18 Excellent 27 Good 46 Fair 9 Poor

Thanks for completing this survey.

APPENDIX B
Boeing Intermediate Manufacturing Technology
Student Internship Survey
(End of Summer)

Student Name: _____ School: _____

Social Security Number: _____ Date of birth: _____
mo / day / year

This survey is intended to give us some useful information about student experiences during the Boeing Second-Year Student Internship Program. The information will be held confidential and will not affect your future in the program. ..ase take a few minutes to complete it and return it to Mr. Jim Murphy at The Boeing Company in the enclosed envelope.

1. The summer internship was designed to teach you about topics such as those listed below. How much do you know now about each of the following topics?

Topics	A Lot	Some	Little	None
Labor and industry	37	47	16	
Resource management and manufacturing computing	26	42	26	5
Group dynamics and communication	84	11		5
Customer relations	74	21	5	
Blueprint interpretation	58	26	16	
Numerical control	32	47	11	11
Optics in manufacturing	32	47	16	5
Manufacturing unit cost	42	26	26	5
Process improvement	68	26	5	

2. The following statements relate to your summer Boeing internship. For each statement please provide one of the following ratings by circling: Strongly Agree (SA), Agree (A), Uncertain (U), Disagree (D), or Strongly Disagree (SD).

STATEMENT	SA	A	U	D	SD
A. The Boeing instructors helped me see the purposes for what I was learning	58	42			
B. New information was connected to what I already know	42	53		5	
C. The information learned was related to practical, real-life applications	63	26	11		
D. The information in one class was related to what was taught later in the internship	42	47	11		
E. Students were encouraged to use the knowledge gained to solve problems	63	37			
F. Students worked together as a team	79	16		5	
G. Students had opportunities for hands-on learning	84	16			
H. Information was taught in an interesting manner	63	32		5	
I. The staff showed that they really care about me	68	26	5		
J. Instructors sometimes worked together to plan or present the class (team teaching)	42	58			
K. I feel that manufacturing would be an interesting career field	37	16	32	16	
L. The instructors knew their content well	79	21			
M. The instructors treated me as a responsible adult	61	33	6		
N. Compared to my high school classes, I feel that I was more successful as a learner at Boeing	84	16			
O. I look forward to continuing as an intern in future years	63	21	11	5	
P. I now look on learning as my job	26	58	16		
Q. Learning can be fun	26	74			
R. I would recommend this internship to my friends	74	26			

STATEMENT	SA	A	U	D	SD
S. I generally discussed my internship experiences with my parents/family at least weekly	42	37	5	16	
T. This internship will help me with my future employment	68	21	5	5	
U. This internship will help me with my future education	58	32	5	5	
V. The Boeing staff made program changes based on input from me and other students	74	21	5		
W. The career speaker program	58	26	5	11	
X. Tours to other manufacturers	63	26	5	5	

3. What were the strong points about your second-year Boeing summer internship?

_____

_____

_____

4. What were the weak points about your second year Boeing internship?

_____

_____

_____

5. What changes would you suggest to improve the second year Boeing internship for next year?

_____

_____

_____

6. Based on your second-year Boeing internship, what changes would you like to see in how your former *high school* could operate for future students?

_____

_____

_____

The following questions deal with your current plans for education and work for this current school year(starting this month)?

7. Education Plan

   A. Are you enrolled to start in a community college or other post-secondary education?

      90 Yes 10 No

   B. If yes, what school are you enrolled at?

      11 – One year certificate or training
      78 – Two year program/community college
      11 – Four year college

   C. Were you motivated to enter the post-secondary program as a result of the Boeing internship?

      50 Yes 45 No

   D. What will be your major or program of focus?

      _____

   E. Were you motivated to enter this major or program of focus as a result of the Boeing internship?

      71 Yes 29 No

   F. If you are not currently enrolled, do you plan to enroll in a post-secondary program within the next year?

      68 Yes 33 No

      If yes, what school?

50 – One-year certificate or training
50 – Two-year program/community college

8 Work Plan

A. Are you working now or do you plan to start work in the next month or two?

79 Yes 21 No

B. If yes, will you be working full-time or part-time?

43 Full-time 57Part-time

C. If yes, what is the specific title of your job or job description?

8 – Part-time work
15 – Manufacturing/electronics
69 – Non-skilled jobs
8 – Skilled jobs (other than manufacturing/electronics)

D. Were you motivated to enter this job as a result of the Boeing internship?

17 Yes 83 No

E. If yes, what is the name of your supervisor and company?

Supervisor: _____
Company name: _____
Company address: _____
_____
Work telephone: (_____)_____
(area code) phone number

As part of the internship evaluation we would like permission to contact employers of the Boeing student internship to check on employer satisfaction with the performance of those we have trained and to obtain helpful ideas for improving the third year of the internship.

May we have your permission to contact your supervisor?

100 Yes 0 No

9. Did you use any skills learned from your basic internship in 1993 in your intermediate internship in 1994?

   100 Yes 0 No

   If yes, please state what skills.

   _____

10. We would like to contact you again in the spring of 1995 about the Boeing internship. Please give us the best address and telephone number to reach you.

    Address: _____

    _____

    Telephone: (_____) _____
    (area code) phone number

Thanks for completing this survey and returning it to The Boeing Company.

Boeing Intermediate Manufacturing Technology
Post-Internship Survey

What were the strong points about your second year Boeing summer internship?

Group work, optics.

I can't be specific, but it was good in general.

The first year was better; liked hands-on approach, working with groups, instructors knew the material.

The final project went really well for me.

Being in the shop, working with others.

Doing what we were learning, group work.

Working in the shop; one strong point about Boeing second year was the project we built that taught us how to use our time and follow instructions; the field trips were very good.

The strong point about my second year at Boeing summer internship is its success in showing me the different opportunities available in the manufacturing world; well-organized/maintained, brought own professionals.

The strongest point about the 2nd year is the numerical control area; this is the area of most interest to me.

Strong points were using what I know.

The tours were really interesting and I enjoyed the tinkertoy project.

The atmosphere, positive attitude; it was easy to learn.

NC familiarization, optics, Heath Techna tour.

The best was building an actual plane part and we learned so many different hands-on things.

It was fun, I learned a lot.

Hands-on training, education staff; building an actual airplane part.

I call it the Depth year; things where took in order; starting from point A to Z; showed how things are done.

Projects — in structural center.

Hands-on experience creating things.

What were the weak points about your second year Boeing internship?

There wasn't enough on electronics.

Teaching — some were not well prepared

Measuring with theodolites.

A lot of classroom work.

The class as a whole didn't care — were being paid so didn't care.

Some career speakers were boring, blueprint reading boring; we didn't actually get to do any shop work until the end of the third week and the fourth week, I personally learned more from doing projects and working in the shop.

Some the activities were not interesting to me; such as, the planning session; some project didn't apply.

Weak point were student relations to other students.

A lot more like high school, i.e. learn then hands-on stuff at the end (if there's time); this was very disappointing.

Some career speakers were boring.

Labor and Industries discussions, some of the computer work (sheet metal center inventory system)

It was "again" too short.

The program location was not close.

Not doing enough.

Some career speakers.

What changes would you suggest to improve the second year Boeing internship for next year?

It was better the first year when we went back and forth from class to IOS daily. Did not like the blocks of class/ISO of two weeks.

More shop time

Be more prepared on presentations — think through presentation

I would like it if we were to do classroom work and then the same day (or the next day) go into the shop.

In blueprint reading you need models, visual examples; more field trips rather than career speakers, we took a trip to heath techna, that was very interesting; we saw real people (young) in good paying jobs that they enjoyed.

Maybe in the first year of the program you can ask the students what they maybe interested in.

Let them experience what we did and figure out what they could do better; everyone is different.

Make it more like the first year, for example teach a little — a little hands-on learning — teach a little, etc.

Have the program lengthened; be more challenging; less traveling distance.

Longer — for 6-8 weeks.

Based on your second year Boeing internship what changes would you like to see in how your former high school could operate for future students?

Apply what we learn, it makes more sense and its easier to learn.

The teachers need to be involved, make it interesting, be there for the kids and not the paycheck. This is just a start.

More hands-on work.

More hands-on.

Be more helpful.

I think that classes should be more linked to the "real" world, because you don't learn skills at school, you get knowledge. Skills are more important if your building a car or a plane, you don't need to have memorized Shakespeare or WWII.

Make the rest of the students realize this program is out there.

Have the teachers learn how to teach the way the instructors taught in the internship.

More tech classes and more in-depth learning.

The exact same way, and a lot more hands-on learning!

Have real life situations, tools and blueprinting (Boeing has the funding/equipment that makes it better); Boeing has advantage of attracting the right people/students.

Be able to take field trips or get hands-on experience to be able to show how it will effect your future and give a better understanding or how it will apply to school and work.

Use applied learning.

I would like to see companies take over high schools; the companies could teach a certain amount of students and have the students work for them.

Show how teachings relate.

Teachers could teach related to the real world.

Not so much textbook based.

What will be your major or program focus?

Athletic training

Optical engineering

History

Computer science

Undecided – 4

Civil engineering

AA stressing business

Engineering

Electrical engineering & Numerical control

Drafting, blueprints

Philosophy/communications

Manufacturing technology

Manufacturing technology

Education

Manufacturing technology (CNC)

Electrical/computer engineering

What is the specific title of your job or job description?

Sporting goods store

Fred Meyer

Checker at QSC

Stock boy

Aerobic instructor/weight trainer/sales

3-D Manufacturing

Kitchen design — Incredible Universe

Homebase

Pizza Hut

Chipper/mechanic

Thriftway

Fred Meyer

What skills did you use that you learned from your basic internship in 1993 in your intermediate internship in 1994?

Blueprinting, measuring equipment, everything

Mathematical skills, group work

Working with teams

The math, precision measuring, working with others

Shop practices — everything

Math, group work, job skills

Team work and improving a system to be more productive

Group dynamics and teamwork

Blueprints, problem solving

Knowledge of using the equipment in the shop area

Blueprint reading, teamwork

PMT skills, basic shop practices, team building

Shop skills, blueprint interpretation, group dynamics

Most basic shop skills (tools), communication, group stuff we learned

Mechanical skills, algebra

Measurement, tool use, team dynamics

Reading blueprints, interpreting

APPENDIX C

Boeing Basic Manufacturing Technology Student Internship Survey
(First Week – Results in Percent)
(N = 73)
All responses shown are in terms of percentages

1. How did you first learn about the internship? (*Check one of the following choices*)

   3 Poster 56 Teacher 33 Counselor 3 Fellow student
   6 Other (specify)_____

2. What is your motivation to participate in the internship program? (*Check all that apply)*

   64 It is a paid internship
   58 The opportunity to know what is going on at Boeing
   86 An opportunity to learn about a career in manufacturing
   48 It will help me understand the linkage between school and the workplace
   29 Other (specify)_____

3. Who encouraged you to apply? (*Check all that apply*)

   60 Parents/Guardians 56 Teacher 40 Counselor 19 Fellow student
   16 Other (specify)_____

4. Who, if anyone, helped prepare you for the interview? (*Check all that apply*)

   25 No one 27 Teacher 33 Counselor 34 Parents/Guardians
   14 Other (specify)_____

5. Was this your first job interview?

   26 Yes 74 No

6. Did you have any trouble with any of the interview questions?

   8 Yes 92 No

   If yes, please explain: _____

7. What would you recommend to improve the selection process of interns?

   _____

8. Was the parent/student orientation on May 14th helpful to you? (*Check one of the choices below*)

34 Very Helpful 33 Helpful 19 Somewhat Helpful 3 Not Helpful
11 Don't Know

9. What were the main points you gained from the orientation?

62 What to expect
33 Where to go
6 Program requirements
11 Other details about the program
7 Other

10. Have you ever considered quitting school?

8 Yes 92 No

11. The summer internship is designed to teach you about topics such as those listed below. Most students have not studied these topics before. How much do you know about each of the following topics?

Topics	A Lot	Some	Little	None
Diversity in the workplace	11	51	34	3
Team Building/working in teams	32	51	17	
Problem solving	19	72	8	
Importance of punctuality	52	28	17	3
Manufacturing process	14	21	47	19
Assembly lines	14	28	39	19
Just in time production systems	4	16	30	49
Precision measuring	12	36	33	19
Manufacturing math/trigonometry	8	36	37	19
Blueprint reading	6	27	32	36
Manufacturing materials	6	27	40	27
Shop safety	53	32	15	
Shop practices	29	28	31	13
Composites		13	39	54
Computer-aided design	13	29	32	26

Topics (Continued)	A Lot	Some	Little	None
Hazardous waste management/hazardous materials	6	19	44	32
Electrical wire bundle build-up	1	14	26	59
Continuous quality improvement	6	34	41	19
Statistical process control		7	31	63
Getting up on time for work	86	12		1
Regular attendance at work	92	9		
Group participation	70	26	4	
Getting along with others	82	18		
Appropriate behavior/Workplace ethics	92	8		
A sense of being a part of a group	72	25	3	
Budgeting time	58	34	7	1
Budgeting money	61	33	6	
Preparing myself for work each day	78	22		

12. Are you certified by the American Red Cross in first aid/CPR?

    28 Yes 72 No

13. The following statements relate to the high school courses you took this past school year. For each statement please provide one of the following ratings by circling: Strongly Agree (SA), Agree (A), Uncertain(U), Disagree (D), or Strongly Disagree (SD).

STATEMENT	SA	A	U	D	SD
A. Teachers helped me see the purposes for what I am learning	10	43	25	21	3
B. New information is connected to what I already know	12	70	12	6	0
C. The information to be learned is related to practical, real-life applications	21	44	22	8	4
D. The information in one class is related to what is being taught in other classes	12	41	23	21	3
E. Students are encouraged to use the knowledge gained to solve problems	25	55	10	10	1
F. Students work together as a team	25	44	14	17	1

STATEMENT (Continued)	SA	A	U	D	SD
G. Students have opportunities for hands-on learning	21	49	11	12	7
H. Courses are taught in an interesting manner	9	25	35	24	7
I. Teachers show that they really care about me	10	32	36	17	6
J. Teachers sometimes work together to plan or present the class (team teaching)	10	37	29	16	8

14. On what basis do you usually select what high school courses to take for the following year? (*Check all that apply)*

12 It depends on the classes my friends are taking
25 How easy the class is said to be
84 How it fits into my future educational plans
70 How it fits into my future work plans
92 High school graduation requirements
55 College entrance requirements
41 Advice from a counselor
25 Advice from a teacher
37 Advice from parents/family
26 The reputation of the scheduled teacher
10 Other (please specify_____)

15. a. Do you have any education plans for after high school graduation?

96 Yes 4 No

b. If yes, what are your educational plans?

25 One-year certificate or training
73 Two-year program/community college
37 Four year college
1 Education beyond college
3 Apprenticeship
1 Business/company training
3 Military
3 Other specific plan
4 Vague response

c. If yes, have you ever discussed these plans with your parents/family?

85 Yes 16 No

16. a. Do you have any work plans for after high school graduation?

70 Yes 30 No

b. If yes, what are your work plans?

29 Part-time work
4 Full-time work
15 Manufacturing/electronics
0 Engineering
8 Non-skilled job
7 Skilled jobs (other than manufacturing/electronics)
3 Professional (other than engineering)
14 Vague response

c. If yes, have you ever discussed these plans with your parents/family?

68 Yes 32 No

17. Do you have an after school/weekend job?

65 Yes 35 No

If yes, what are you doing?

8 Manufacturing/electronics job
18 Fast food job
32 Other service job
7 Non-service job
3 Vague response

18. You are: 72 Male 28 Female

19. What is your ethnic background? (Circle one or more)

Asian or Pacific Islander	8
Hispanic, regardless of race	6
Black, not of Hispanic origin	6
White, not of Hispanic origin	81
American Indian or Alaskan Native	10

20. How would you rate your ability to learn mathematics?

14 Excellent 42 Good 38 Fair 7 Poor

21. How would you rate your ability to learn science?

25 Excellent 45 Good 30 Fair 0 Poor

22. How would you rate your ability to learn to write well?

13 Excellent 54 Good 25 Fair 9 Poor

APPENDIX D
Boeing Basic Manufacturing Technology
Student Internship Survey
(Last Week)
N = 73

1. The summer internship was designed to teach you about topics such as those listed below. How much do you know now about each of the following topics?

Topics	A Lot	Some	Little	None
Diversity in the workplace	46	43	10	2
Team building/working in teams	86	12	2	0
Problem solving	59	40	2	0
Importance of punctuality	60	31	9	0
Manufacturing process	65	32	3	0
Assembly lines	59	40	2	0
Just-in-time production systems	60	29	11	0
Precision measuring	85	14	2	0
Manufacturing math/trigonometry	63	33	5	0
Blueprint reading	34	42	22	3
Manufacturing materials	52	42	6	0
Shop safety	75	22	3	0
Shop practices	77	20	2	2
Composites	57	37	6	0
Computer-aided design	23	67	25	5
Hazardous waste management/hazardous materials	41	45	13	2
Electrical wire bundle build-up	54	43	2	2
Continuous quality improvement	55	40	5	0
Statistical process control	31	49	17	3
Getting up on time for work	83	9	3	5
Regular attendance at work	83	9	3	5
Group participation	86	14	0	0
Getting along with others	91	8	2	0
Appropriate behavior/workplace ethics	85	14	2	0
A sense of being a part of a group	89	11	0	0
Budgeting time	59	37	5	0
Budgeting money	42	48	8	3
Preparing myself for work each day	79	19	3	0

2. The following statements relate to your summer Boeing internship. For each statement please provide one of the following ratings by circling: Strongly Agree (SA), Agree (A), Uncertain (U), Disagree (D), or Strongly Disagree (SD).

STATEMENT	SA	A	U	D	SD
A. The Boeing instructors helped me see the purposes for what I was learning	46	49	5	0	0
B. New information was connected to what I already know	32	55	9	2	2
C. The information learned was related to practical, real-life applications	52	32	15	0	0
D. The information in one class was related to what was taught later in the internship	47	47	9	2	0
E. Students were encouraged to use the knowledge gained to solve problems	55	34	11	0	0
F. Students worked together as a team	54	37	6	3	0
G. Students had opportunities for hands-on learning	80	17	3	0	0
H. Information was taught in an interesting manner	28	42	23	8	0
I. The staff showed that they really care about me	45	39	15	0	2
J. Instructors sometimes worked together to plan or present the class (team teaching)	42	49	6	0	3
K. I feel that manufacturing would be an interesting career field	31	35	28	5	2
L. The instructors knew their content well	48	39	14	0	0
M. The instructors treated me as a responsible adult	27	48	17	6	2
N. Compared to my high school classes, I feel that I was more successful as a learner at Boeing	77	14	6	3	0
O. I look forward to continuing as an intern in future years	79	20	2	0	0
P. I now look on *learning* as my job	39	45	14	0	2
Q. Learning can be fun	48	42	8	0	2
R. I would recommend this internship to my friends	70	25	5	0	0
S. I generally discussed my internship experiences with my parents/family at least weekly	72	27	2	0	0
T. This internship will help me with my future employment	72	22	6	0	0
U. This internship will help me with my future education	70	25	5	0	0
V. The Boeing staff made program changes based on input from me and other students	48	41	9	2	0

Appendix E
Boeing Basic Manufacturing Technology
Portland Student Internship Survey
(First Week)

Student Name: _____ School: _____

Social Security Number: _____ Date of birth: _____
mo / day / year

This survey is intended to give us some useful background about the students who are entering the Boeing Student Internship Program so that we can develop a relevant summer experience for you. The information will be held confidential and will not affect your selection or participation in the program. Please take a few minutes to complete it and return it to the internship coordinator. If you do not understand a particular question please feel free to ask.

1. How did you first learn about the internship? (*Check one of the following choices*)

   0 Poster 100 Teacher 0 Counselor 0 Fellow student
   0 Other (specify)_____

2. What is your motivation to participate in the internship program? (*Check all that apply)*

   67 It is a paid internship
   83 The opportunity to know what is going on at Boeing
   100 An opportunity to learn about a career in manufacturing
   50 It will help me understand the linkage between school and the workplace
   33 Other (specify)_____ _____

3. Who encouraged you to apply? (*Check all that apply*)

   67 Parents/Guardians 84 Teacher 17 Counselor 17 Fellow student
   25 Other (specify)_____

4. Who, if anyone, helped prepare you for the interview? (*Check all that apply*)

   25 No one 50 Teacher 8 Counselor 42 Parents/Guardians
   0 Other (specify)_____

5. Was this your first job interview?

   25 Yes 75 No

6. Did you have any trouble with any of the interview questions?

   8 Yes 92 No

   If yes, please explain: _____

   _____

   _____

7. What would you recommend to improve the selection process of interns?

   _____

   _____

   _____

8. Was the parent/student orientation in March at the Boeing Company helpful to you? (*Check one of the choices below*)

   58 Very Helpful 42 Helpful 0 Somewhat Helpful 0 Not Helpful
   0 Don't Know

   9. What were the main points you gained from the orientation?

   100 - What to expect
   25 - Program requirements
   42 - Other details about the program
   17 - Other

10. Have you ever considered quitting school?

    8 Yes 92 No

11. The summer internship is designed to teach you about topics such as those listed below. Most students have not studied these topics before. How much do you know about each of the following topics?

Topics	A Lot	Some	Little	None
Diversity in the workplace	0	33	83	17
Team Building/Working in teams	25	58	17	
Problem solving	33	42	25	
Importance of punctuality	58	17	25	
Manufacturing process	8	33	58	
Assembly lines	8	33	42	17
Just in time production systems	8	17		75
Precision measuring	36	36	9	18
Manufacturing math/trigonometry		25	50	25
Blueprint reading	8	25	25	42
Manufacturing materials	8	50	33	8
Shop safety	58	33		8
Shop practices	33	33	17	17
World class competitiveness	8	33	17	42
Computer-aided design	17	42	33	8
Hazardous waste management/Hazardous materials		17	33	50
Tool design		33	25	42
Continuous quality improvement		25	25	50
Statistical process control		17		83
Getting up on time for work	83	8	8	
Regular attendance at work	83	8	8	
Group participation	67	33		
Getting along with others	58	42		
Appropriate behavior/Workplace ethics	75	25		
A sense of being a part of a group	50	33	17	
Budgeting time	42	42	8	8
Budgeting money	33	51	8	8
Preparing myself for work each day	50	33	17	

12. Are you certified by the American Red Cross in first aid/CPR?

17 Yes 83 No

13. The following statements relate to the high school courses you took this past school year. For each statement please provide one of the following ratings by circling: Strongly Agree (SA), Agree (A), Uncertain (U), Disagree (D), or Strongly Disagree (SD).

STATEMENT	SA	A	U	D	SD
A. Teachers helped me see the purposes for what I am learning	8	42	17	25	8
B. New information is connected to what I already know	8	67	25		
C. The information to be learned is related to practical, real-life applications	17	50	8	17	8
D The information in one class is related to what is being taught in other classes		67	8	17	8
E. Students are encouraged to use the knowledge gained to solve problems	33	58	8		
F. Students work together as a team	33	42	8	17	
G. Students have opportunities for hands-on learning	25	33	25	17	
H. Courses are taught in an interesting manner	8	33	17	33	8
I. Teachers show that they really care about me	17	42	17	17	8
J. Teachers sometimes work together to plan or present the class (team teaching)	8	58	8	17	8

14. On what basis do you usually select what high school courses to take for the following year? (*Check all that apply)*

33 It depends on the classes my friends are taking
0 How easy the class is said to be
83 How it fits into my future educational plans
92 How it fits into my future work plans
83 High school graduation requirements
58 College entrance requirements
50 Advice from a counselor
58 Advice from a teacher
42 Advice from parents/family
17 Other (please specify_____ _____)

15 a. Do you have any education plans for after high school graduation?

100 Yes No

b. If yes, what are your educational plans?

75 Two-year program/community college

25 Four-year college
8 Military

c. If yes, have you ever discussed these plans with your parents/family?

92 Yes 8 No

16 a. Do you have any work plans for after high school graduation?

75 Yes 25 No

b. If yes, what are your work plans?

25 Part-time work
17 Full-time work
17 Manufacturing/electronics
8 Non-skilled job
8 Skilled job (other than manufacturing/electronics)
34 Vague response

c. If yes, have you ever discussed these plans with your parents/family?

70 Yes 30 No

17. Do you have an after school/weekend job?

58 Yes 42 No

If yes, what are you doing? 17 Part-time job
17 Full-time job
17 Manufacturing/electronics
8 Engineering

18. You are: 92 Male 8 Female

19. What is your ethnic background? *(Circle one or more)*

Asian or Pacific Islander 0
Hispanic, regardless of race..... 8
Black, not of Hispanic origin..... 0
White, not of Hispanic origin 83
American Indian or Alaskan Native.....17
Other..... 0

20. How would you rate your ability to learn mathematics?

17 Excellent 42 Good 42 Fair 0 Poor

21. How would you rate your ability to learn science?

25 Excellent 58 Good 17 Fair 0 Poor

22. How would you rate your ability to learn to write well?

25 Excellent 0 Good 75 Fair 0 Poor

Thanks for completing this survey.

APPENDIX F

Boeing Basic Manufacturing Technology
Portland Student Internship Survey
(Last Week)

Student Name: _____ School: _____

Social Security Number: _____ Date of birth: _____
mo / day / year

This survey is intended to give us some useful information about student experiences during the Boeing Student Internship Program. The information will be held confidential and will not affect your future in the program. Please take a few minutes to complete it and return it to the internship coordinator. If you do not understand a particular question please feel free to ask.

1. The summer internship was designed to teach you about topics such as those listed below. How much do you know <u>now</u> about each of the following topics?

Topics	A Lot	Some	Little	None
Diversity in the workplace	58	42		
Team Building/Working in teams	92	8		
Problem solving	67	33		
Importance of punctuality	83	17		
Manufacturing process	58	42		
Assembly lines	42	42	17	
Just-in-time production systems	50	50		
Precision measuring	75	25		
Manufacturing math/trigonometry	25	50	25	
Blueprint reading	25	75		
Manufacturing materials	36	46	18	
Shop safety	92	8		
Shop practices	75	25		
World class competitiveness	58	33	8	
Computer-aided design	17	67	17	
Hazardous waste management/Hazardous materials	17	67	17	
Tool design	17	42	42	
Continuous quality improvement	33	67		
Statistical process control	67	25	8	
Getting up on time for work	100			
Regular attendance at work	100			

Topics (continued)	A Lot	Some	Little	None
Group participation	100			
Getting along with others	91	9		
Appropriate behavior/workplace ethics	100			
A sense of being a part of a group	73	27		
Budgeting time	55	36	9	
Budgeting money	64	27	9	
Preparing myself for work each day	100			

2. The following statements relate to your summer Boeing internship. For each statement please provide one of the following ratings by circling: Strongly Agree (SA), Agree (A), Uncertain (U), Disagree (D), or Strongly Disagree (SD).

STATEMENT	SA	A	U	D	SD
A. The Boeing instructors helped me see the purposes for what I am learning	67	33			
B. New information was connected to what I already know	50	50			
C. The information learned was related to practical, real-life applications	75	25			
D. The information in one class was related to what was taught later in the internship	42	58			
E. Students were encouraged to use the knowledge gained to solve problems	58	42			
F. Students work together as a team	50	42	8		
G. Students had opportunities for hands-on learning	33	67			
H. Information was taught in an interesting manner	8	58	33		
I. The staff showed that they really care about me	50	50			
J. Instructors sometimes worked together to plan or present the class (team teaching)	50	33	17		
K. I feel that manufacturing would be an interesting career field	75	25			
L. The instructors knew their content well	67	33			
M. The instructors treated me as a responsible adult	58	33	8		
N. Compared to my high school classes, I feel that I was more successful as a learner at Boeing	50	42	8		
O. I look forward to continuing as an intern in future years	100				
P. I now look on *learning* as my job	83	17			
Q. Learning can be fun	67	33			

STATEMENT (continued)					
R. I would recommend this internship to my friends	83	17			
S. I generally discussed my internship experiences with my parents/family at least weekly	75	25			
T. This internship will help me with my future employment	92	8			
U. This internship will help me with my future education	92	8			
V. The Boeing staff made program changes based on input from me and other students	75	8	17		

3. What were the major strengths of your Boeing summer internship?

_____

_____

_____

4. What were the weaknesses of your Boeing internship?

_____

_____

_____

5. What changes would you suggest to improve the Boeing internship for next year?

_____

_____

_____

6. Based on your Boeing internship what changes would you like to see in how your *high school* operates?

_____

_____

_____

7 What kinds of things might be done during your next year of school to keep you focused on future career possibilities in manufacturing technology?

_____

_____

_____

Thanks for completing this survey.

Appendix G

Intermediate Student Internship Interview Questions

1. As you think back on your internship experience this summer and last what things have gone especially well for you? Why?
2. What things haven't worked out well for you? Why?
3. Based on your experience, what changes would you suggest for a) the first year summer internship, b) the second year internship, c) things to improve the fit between the summer internship and your senior year of high school.
4. Did your high school teachers last year know that you participated in the Boeing summer internship? About what percentage of teachers knew that you participated?
5. Has there been any attempt by your school to change your senior year classes and activities to fit what you learned in your first year summer internship? If yes, please describe. If no, what changes do you feel could have been made?
6. Have your parents or family helped to support your participation in the internship? If yes, how?
7. What changes, if any, have the internship created for you in terms of: a) your educational plans, b) your vocational plans, c) your attitude toward education, d) your attitude toward work, e) communications with your parents or family, f) communications with your teachers and other adults, g) your personal development, h) your motivation to learn new things, i) other areas?
8. Do you feel that the Boeing staff treated you as a responsible adult? What did they do to communicate this feeling to you?
9. Do you feel that your classroom teachers treated you as a responsible adult? What did they do to communicate this feeling to you?
10. The Boeing staff use a continuous quality improvement process daily to get student reactions to their experiences and to improve the internship. Have you seen any changes made that were based upon ideas you suggested? If yes, please give some examples.
11. What experiences did you have in the Boeing internship that you are likely to remember 10 years from now? Why will these experiences be important to you?
12. Do you have any other thoughts you would like to share about your
13. Are there support services such as child care, tutoring, etc. that would make the internship easier for you? If yes, what?
14. If there were opportunities for an internship during the school year, such as after school each day, would you be interested?